

Easy to use

All functions are accessed via a menu. The functions are selected with the arrow key and activated by pressing the ENTER key. The required menu can be accessed in seconds. Incorrect entries or range violations produce an immediate audible alarm and are shown on the display. An audible signal is even emitted when a key is pressed. The highly successful and easy to follow ECOM menu system has been retained throughout. All data entered via the keyboard remains in the non-volatile memory until it is overwritten, even when the instrument is switched off.

Rugged and reliable

Aside to the comprehensive functions of the Ex-CAL 3000 meeting the needs of on-site engineers, the metal housing is designed for the harshest of environments. Being extremely rugged and shockproof helps guarantee continuous and proper functioning in the most arduous of conditions. The Ex-CAL 3000 is not easily affected by dirt and the electronics are securely protected. Changing of the power module is a quick and straightforward procedure and connections are made using standard 4mm sockets with the interface connection being via a sturdy metal plug.

Highest accuracy

With an accuracy of 0,02 % at a resolution of 10µV and 10 µA when measuring and transmitting, the multi-calibrator guarantees the highest level of accuracy. Auto-ranging is standard. Using the Ex-CAL means measuring instead of guessing.

Exact temperature measurement

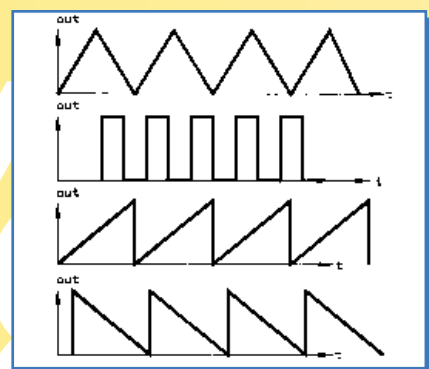
Simple connection of 2, 3 or 4 wire Pt 100 sensors or thermocouples to the input sockets enables measurements up to 1800° C to be made. Modern processor technology ensures rapid, exact and repeatable measurements. Bare wires can be connected using the quick-clamp terminals supplied.

Ramp function

All output values, e.g. thermocouples, Pt 100 signals, currents and voltages can be transmitted using automatic ramp functions.

For this, start of scale and full scale values, interval times and step sizes must be defined. Rising or falling, rectangular or triangular forms can be selected. The triangular form is the ideal method for checking limit values.

Simultaneous display



The alphanumeric display shows input and output values simultaneously. This enables the extent to which input and output values correspond to be assessed, for example, when testing a transmitter in the hazardous area. The input variables cover µV and µA through to the most common temperature variables such as Pt 100 and thermocouples. Output values are provided in the normal current and voltage levels. Input and output levels are electrically isolated from each other.

Transmitter simulation

The Ex-CAL can be used to simulate a 4 - 20 mA transmitter. The voltage present on the output is sufficient to drive the corresponding load. The voltage permits measurements to be taken from and power supplied to the transmitter at the same time. This avoids the need to remove the unit under test from the hazardous area. The Ex-CAL allows testing to be performed on site.

Electrical isolation

The multi-calibrator has a proper electrically isolated amplifier. This enables even simple transmitters that have different potentials between input and output to be tested.

Reference junction compensation

Reference junction compensation is necessary, especially when measuring with thermocouples, if the ambient temperature at the site of measurement is not the same as the temperature of the measuring instrument. A temperature reference junction provides automatic or manual reference point compensation.

Recalibration via software

All measurement and test instruments should be checked regularly for accuracy (ISO 9000). With the Ex-CAL 3000, a special code provides access to recalibration mode. After connecting a reference instrument, the Ex-CAL can then be recalibrated from the keypad. No need to open the housing or adjust potentiometers. A new standard in recalibration!

Data acquisition and documentation-no problem with Ex-Cal 3000

Documentation of calibration results

Quality standards such as ISO 9000 are placing more and more demands on calibration documentation. Documentation is an important factor in minimising risks during production and improving quality.

Aquisition of transmitter data

The Ex-CAL memory provides nonvolatile storage for large amounts of data. For instance, the results of an accuracy test of a 2-wire transmitter in the hazardous area can be stored in the Ex-CAL's memory. The Ex-CAL provides the transmitter power supply and at the same time simulates an input variable such as a Pt 100 or thermocouple signal. The output signal of the transmitter is stored by the Ex-CAL and can be accessed by the documentation software. There is enough memory capacity to store calibration data from 8 transmitters.

Calibration certificate

A calibration certificate based on national and international standards is available as an option. Digital calibration makes recalibration easy to carry out in your own laboratory or certified laboratory. After switching on the Ex-Cal, the due date calibration appears in the display. This can only be changed by entering a special code.

Input current circuit:	$U_{max} = 65V$	
	$I_{max} = 500mA$	
	$P_{max} = 1000mW$	
Output current circuit:	$U_0 = 22,45V$	
	$I_0 = 78,7mA$	
	EEx ia IIC	EEx ib IIC
Co	68nF	135nF
Lo	0,5mH	5mH
Interface circuit:	$U_0 = 9V$	
	$I_0 = 153mA$	
	EEx ia IIC	EEx ib IIC
Co	720nF	7µF
Lo	0,5mH	1mH

Technical Data:

Type of Signal	Range	Simulation-Accuracy	Resolution (±1 digit)	Measuring Accuracy	Resolution (±1 digit)	
Current	0...25mA	0,01mA	0,02%			
	0...30mA			0,001mA	0,03%	
	0...300mA			0,01mA	0,03%	
Voltage	mV	0,01mV	0,02%			
	V	0,1mV	0,02%			
	V	1mV	0,02%			
	Range 1	-50,00mV...50,000mV			1µV	0,03%
	Range 2	-500,0mV...500,00mV			10µV	0,02%
Range 3	-2,0000V...2,000V			100µV	0,02%	
Range 4	-20,000V...20,000V			1mV	0,02%	
Range 5	-65,00V...65,00V			10mV	0,03%	
Temperature	Pt 100	-199°C...800°C	1°C	0,15°C	0,1°C	0,20°C
	Type J	0°C...760°C	1°C	0,25°C	0,1°C	0,25°C
	Type K	0°C...1000°C	1°C	0,75°C	0,1°C	0,75°C
	Type T	-100°C...400°C	1°C	0,45°C	0,1°C	0,45°C
	Type E	0°C...1000°C	1°C	0,35°C	0,1°C	0,35°C
	Type R	500°C...1750°C	1°C	1,75°C	0,1°C	1,75°C
	Type S	500°C...1750°C	1°C	2,05°C	0,1°C	2,05°C
	Type B	500°C...1800°C	1°C	2,15°C	0,1°C	2,15°C
	Type L	-100°C...900°C	1°C	0,75°C	0,1°C	0,75°C

EEx ia IIC T6 / EEx ib IIC T6



Intrinsically-Safe Multicalibrator Ex-CAL 3000

For measurement, calibration, simulation and documentation in hazardous areas.

Simulation / measurement:

- thermocouples
- Pt 100 resistance thermometers
- mA,mV,V

For process engineering:

- simulates 2-wire transmitter
- simultaneous reading of input and output values
- electrical isolation of inputs and outputs
- ramp function
- rapid adjustment with memory keys

Technical Data:

Operating temperature:	-10°C ... +40°C
Storage temperature:	-20°C ... +50°C
Warm-up time:	max. 2 min. at constant ambient temp
Relative humidity:	0 to 90% r.H. non-condensing
Protection class:	IP 53

Supply:	6 x 1,5V-NiCd batteries 5,5h at 20mA) or 6 x 1,5V-primary cells to IEC LR 14 (17 h at 20mA)
Warm-up time:	max. 2 min. at constant ambient temp
Relative humidity:	0 to 90% r.H. non-condensing
Low batt display:	pre-warning
Housing:	rugged metal housing

Dimensions:	220 x 135 x 50 mm
Weight:	approx. 1,5 kg (without batteries)
Accessories:	Carrying case, 1 set NiCd accumulators, measuring leads, manual, 2 quick-clamp terminals
Options:	Process documentation software, additional power module type PM 22, charger terminal type Lt 30

Process documentation:

- documentation of calibration results
- RS 232 interface
- two-way communication PC/Ex-CAL

Self-calibration:

- via software

Power supply:

- standard battery
- replacable power module

Ex-data:

Certification

EEx ia IIC T6
EEx ib IIC T6

Certificate of Conformity

PTB-Nr. Ex-95.D.2106